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PCT/NZ05 000024

CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 18 August 2003 with an application for Letters Patent number 527669 made by Syrotech Limited.

I further certify that the Provisional Specification has since been post-dated to 18 November 2003, and then further post-dated to 18 February 2004 under Section 12(3) of the Patents Act 1953.

Dated 3 March 2005.

Neville Harris
Commissioner of Patents, Trade Marks and Designs

COMMISSIONER OF PATENTS, TRADEMARKS & DESIGNS
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PATENTS ACT 1953

PROVISIONAL SPECIFICATION

IMPROVEMENTS TO STEERING APPARATUS

I/WE Syrotech Limited, a New Zealand Company of 1 Titoki Place, Pukete,

Hamilton, New Zealand.

do hereby declare this invention to be described in the following statement:

IMPROVEMENTS TO STEERING APPARATUS

Technical Field

This invention relates to improvements to steering devices.

More specifically, the present invention relates to improvements to cycle handlebars.

It should be appreciated that the principles of the present invention may apply to other steering devices.

Background Art

Cycling is a recreational activity and in terms of sporting activities, is very popular. Cycling features in major sporting events such as Olympics, Commonwealth Games and at world, national and regional events.

Riders are often bunched together during these events. It is important during these times that the rider has as much control over the cycle as possible. Stability is best maintained when the rider has both hands positioned or gripped on the handlebars, and where the hands are in contact or in the proximity of gear and brake levers. This safety requirement is important at all times during a ride.

The hold on the handlebars at all times is often relinquished during competition or recreation, usually when the rider is making a transition from a wide or normal (conventional) position to an aero position. The aero position is the typical position taken when a rider is using aerobars.

The term 'grip' may mean to hold to support the riders upper body and facilitate balance and directional control. It should also be appreciated that the term grip can also mean the positioning of the hands in the correct position on the handle bars, to provide control by steering.

Aerobars were developed for cycle racing around 1987. They are an accessory that clip onto conventional handlebars so that the rider may assume a more streamlined riding position.

They usually have two handles which extend forward from the conventional handlebars and are close together, approximately 150mm apart.

Padded arm rests can be incorporated into aero bar accessories to support the forearms near to the elbows.

Aerobars have allowed the rider to assume a compact streamlined position, which has been shown to improve speed and efficiency by around 5%.

There has previously been no easy access to brakes or gear change levers on aerobars. Brake levers, gear change levers and combined brake and gear change levers such as the Shimano STI system are usually remote from the aerobars. Therefore when the rider is in the aero position, control of the bicycle is compromised.

Aerobars have therefore been outlawed for conventional cycle racing, and have been attributed to some major crashes during bunch riding.

However, triathlon, duathalon, and time trial cycle racing do permit the use of aerobars.

The aero position is also used whenever possible. This may be on open roads, during head winds, and most times that the rider settles into a steady racing rhythm. This may be for the bulk of the distance travelled by the rider.

Wide or conventional handle hold positions are used when mounting and dismounting the bike or travelling at slow speeds. This may include starting off or slowing to a stop. The wide position is also used when the rider is off the seat, supporting their weight on the pedals and handlebars, during hill climbing or acceleration, or other times of slower speeds, where the wide position provides better control. The wide

position is also used when gear changes are made or braking is necessary, if the braking and control levers are located near the handles at the wide position.

On handle bars that include a downwardly curved portion at either end, a lower wide position (the "drops" position) is achievable. This position is more usually associated with conventional cycle racing, as opposed to triathlon riding. The gear change levers are often remote from this position, and in any case often require relinquishing grip in order to effect a gear change.

A further problem with conventional aero bar systems is that although the rider is in a more streamlined position in the aero position, the handlebars that are used in the wide position remain in the air stream, and provide drag, which may slow the rider down or expend energy.

The existence of two sets of handlebars also adds to the weight of the cycle, which may reduce riding efficiency and speed.

One example of adjustable handlebars is New Zealand Patent No. 102780. However, this document discloses a device which only provides for lateral movement of the handlebars and does not enable the handlebar to be fixed into multiple positions. This is obviously not practical for competitive riding.

This device is also not adjustable while the bicycle is being ridden.

What is required then is a handlebar apparatus which provides for improved control, drag efficiency, and access to gear change and brake levers, in all required positions. Which can also be adjusted while the bicycle is being ridden.

All references, including any patents or patent applications cited in this specification are hereby incorporated by reference. No admission is made that any reference constitutes prior art. The discussion of the references states what their authors assert, and the applicants reserve the right to challenge the accuracy and pertinency of the

cited documents. It will be clearly understood that, although a number of prior art publications are referred to herein, this reference does not constitute an admission that any of these documents form part of the common general knowledge in the art, in New Zealand or in any other country.

It is acknowledged that the term 'comprise' may, under varying jurisdictions, be attributed with either an exclusive or an inclusive meaning. For the purpose of this specification, and unless otherwise noted, the term 'comprise' shall have an inclusive meaning - i.e. that it will be taken to mean an inclusion of not only the listed components it directly references, but also other non-specified components or elements. This rationale will also be used when the term 'comprised' or 'comprising' is used in relation to one or more steps in a method or process.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

Disclosure of Invention

According to one aspect of the present invention there is provided apparatus for control of a vehicle by a rider, including,

handlebars moveable to at least two positions,

characterised in that the handlebars are capable of being moved from a first position to another position by the rider and are capable of being fixed in at least one position by the rider.

According to another aspect of the present invention there is provided apparatus for control of a vehicle by a rider, including

handlebars moveable to at least two positions,

wherein the handlebars are capable of moving around a central point

characterised in that the handlebars are capable of being moved from a first position to another position by the rider by pivoting around a central point and are capable of being fixed in at least one position by the rider.

According to another aspect of the present invention there is provided apparatus for control of a vehicle by a rider as described above, including

at least one spring

wherein the spring(s) is incorporated into the handlebars

characterised in that the spring(s) provides load to the handlebars when being moved from a first position to another position by the rider.

Reference to handlebars will now be made with reference to bicycle handlebars. This should not be seen to be limiting however as the principles of the present invention may be applied to other steering mechanisms requiring multiple positioning.

Reference to handlebars may include any part of the mechanism used to control or direct or steer or maintain balance of the bicycle and provide upper body support to the rider. The term handlebars should be understood to usually include controls for braking or gear changing and may also include at least one handle or area used to grip or control the steering mechanism. The plural should also be interpreted to encompass a single handlebar.

The handlebars may include a gripping area, to be gripped by the rider.

Reference to at least two positions will be made with reference to the first position being a position seen when riders are using aerobars and/or the riding position taken when a rider is assuming a more streamlined position.

This maybe hereafter referred to as the aero position.

Reference to another position may be made with reference to the more upright position

seen when riders are holding or gripping conventional handlebars, in times of acceleration, braking, hill climbing or gear changing or simply as an option to using aerobars.

This position shall be hereafter referred to as the wide position.

The wide position may also incorporate a "drops" position, being the riding position where a rider grips conventional downwardly curved handlebars.

Sometimes riders have their hands gripped on the horizontal straight section of conventional handlebars nearer the middle of the handle bars. This position may also be a position within the definition.

The above definitions should not be seen to be limiting the scope of the present invention's manufacture or use, as other positions may be achieved without departing from the scope of the present invention.

At least two positions may also refer to transitory positions between the aero and wide position, or other positions that may conceivably be taken by a rider.

The positions may be discrete or continuous.

Throughout this specification, reference to a rider may be made with reference to someone who is in the act of riding the bike, as distinguished from a rider who may have stopped and may be adjusting or maintaining the bike.

Reference to the handlebars being capable of being fixed in at least one position by the rider in this specification may refer to the handlebars being able to be fixed in the positions previously referred to.

In preferred embodiments, the handlebars are divided in the centre to produce a handle bar made up of two portions, with each portion capable of moving or pivoting around an axis.

Throughout this specification, reference to the term handlebars should now be

understood to mean a handlebar made up of two portions, each portion consisting of up to half the handlebar where the handlebar has been split at or around a central point. Accordingly, it should be understood that each handlebar portion has the appropriate brake and gear mechanisms attached, as is usual for a standard handle bar arrangement.

It should be appreciated that each portion of the handlebar can either move around its own pivot point, or both can pivot or move around a central axis point that is separate from the axis that is used for steering.

In preferred embodiments each handlebar portion moves around its own pivot point, each pivot point substantially equidistant from the central axis of the bike.

The advantage of the movement of the handlebar portions moving across an arc at any point between the vertical and horizontal planes is that the movement is sufficiently different from that of the steering so as to make it possible to control both the bicycle and the handlebar movement at the same time.

A further advantage is that the movement is caused as a result of spring pressure when released by the rider so that steering and balance are not affected or compromised if the mechanism should malfunction or become jammed.

Previous systems that rotated on a similar plane to the steering could cause an accident if one side of the steering jammed, causing the bicycle to turn sharply to the left or right.

US Patent No. 3,863,521 (Gastos et. al.) describes adjustable handlebars that move between two set positions where the rider moves a locking means which releases the bars from one position and allows them to be moved and locked to a second position. It is a disadvantage of this invention that the movement of the handlebars is in the same plane as steering control, therefore providing less control while changing handlebar positions.

US Patent No. 5,555,775 (D'Aluisio et. al.) describes adjustable handlebars that can move between two set positions. These bars are intended be interconnected for coordinated swinging movement between the standard and the aero position, so that when either of the handlebars is moved, the other moves with it. Again, the movement of the handlebars is in substantially the same plane as steering control, therefore providing less control while changing handlebar positions.

US Patent No. 5,737,967 (Hartley) describes adjustable handlebars, where the two sides of the handlebars are connect by a meshed gearing, meaning that movement of both bars takes place at the same time, providing the rider with less control during movement between the standard and aero positions.

Although in preferred embodiment the handlebar portions each move in an arc between positions, other embodiments may move in a straight line or rotate through different planes on more than one axis, with out departing from the scope of the present invention.

In further preferred embodiments, the handlebars may be fixed in the desired position using a releasable locking or latching mechanism, with an actuator.

Preferably, the actuator may be a spring pressure release mechanism, a lever, button, switch or some other device although these are listed by way of example only and should not be seen to be limiting in any way.

In preferred embodiments however, the actuator may be a spring pressure release mechanism.

Preferably, the spring pressure release mechanism may be operable by the forearms of the rider against armrests positioned on each handlebar portion, although this should not be seen to limiting in any way as it should be appreciated that other means could be used to release the spring mechanism including a button and cable arrangement or the

like.

In preferred embodiments however, the spring pressure release mechanisms are operable by the forearms of the rider against armrests.

In further preferred embodiments the spring may be exterior or interior to the handlebar. Exterior springs have the advantage of being easy to adjust and maintain, however, internal springs are less likely to be damaged in a fall, pick up a stone or catch the rider in any way. Internal springs can be fitted down the interior of the handle bars and down the interior of the arms that support the armrests.

When a rider wishes to go into the aero position, one arm is moved onto the armrest, depressing it slightly against the spring pressure. This pressure extends, compresses, or rotates the spring, causing it to release the locking mechanism, releasing the corresponding handlebar which in turn pivots upwards and forward into the aero position as a result of pressure from its own spring. The handlebar should then arrive in, or near the rider's hand.

In some embodiments, the locking mechanism can include a locking cam, a light catch or other latching device although these are listed by way of example only and should not be seen to be limiting in any way.

In preferred embodiments, the locking mechanism is a locking cam.

It should be appreciated that the handle bar can be held in the aero position by spring pressure alone.

In some embodiments however, the handle bar can be held against a fixed stop and be held in place by a light catch which will release immediately on release of the rider's weight from the relative armrest.

In some embodiments, the weight of an arm on the arm rest alone causes pressure to bear on the handlebars, acting like a brake, preventing rotation of the bars back to the

wide position.

In preferred embodiments, the handle bar is held in place by a light catch, which releases immediately on release of the rider's weight from the relative armrest.

Once the rider has control of the first handlebar, he or she then moves the other hand onto its armrest, tripping the handle bar locking cam and allowing it to swing upward and forward into the aero position under spring pressure and arriving in the riders other hand.

At any time the rider wishes to return the bars to the normal position, he or she pushes the bars, together or one at a time, down against the spring pressure until the releaseable locking mechanism on each side secures its respective arm in the wide position.

It should be appreciated that the arm must be lifted from the armrest in order to move from the aero to the normal position, as the armrest will swing upward under its own spring pressure and therefore rotate the cam to lock the corresponding handle bar securely in place.

During this operation, full steering control can be maintained as the axis that the bars pivot on is nearer to horizontal. Conversely, the axis of the front forks is nearer to vertical. The push/pull operation of steering a bike can continue throughout the movement of the handlebars between various positions.

The above mechanism should not be seen to be limiting however, as other methods of releasing the lockable mechanism may be used.

The brain of a rider can differentiate vertical from horizontal movements, therefore allowing transition while steering. The natural reactions of a rider, including involuntary correcting movements with regard to steering and balance and the like, are still possible.

The addition of the spring to the handlebars allows the rider to work against the pressure of the springs to place the handlebars in the wide position, effectively providing feedback to the rider.

Additionally, the spring pressure also helps to maintain control by providing balanced progressively variable resistance to each side of the handlebars.

It should also be appreciated that each spring has provision to adjust and alter the tension to match that of the spring on the opposing side.

The spring in each handle serves two purposes; firstly to move its handle from the wide position to the aero position and secondly it provides a balanced resistance that make it easier to return the bars back to the normal position, either together or separately.

The spring pressure provides a rider with individual control to each side of the handlebars, allowing equal pressure balance on each side, allowing continuous smooth riding while transiting between the wide and aero positions, or the wide to the drop position, but not limited to these.

This system most closely resembles the method that riders use to transfer from the normal wide position to the aero position. Firstly, one forearm is placed in the armrest and then the hand takes a comfortable grip on the aero bar and then the other hand is placed in position in the same fashion.

To return to the wide position (in an emergency both hands can transfer from the aero bars very quickly at the same time), pushing the bars down against the spring pressure mimics this movement and gives added security as the steering control is maintained.

It should be appreciated that a purpose of the springs is to provide an automatic operation that allows the rider to achieve the desired position quickly and with the least distraction from the act of riding as possible.

It should also be appreciated that the action achieved by the springs may also be

achieved with pneumatics, electronics or other mechanical means, for example, using the airflow, direct link from the armrest to the bar, or combinations of the above, although these are listed by way of example only and should not be seen to be limiting in any way.

The springs also play an important part of the operation because should the mechanism become jammed for some reason like a crash or a jammed stone, it wont operate correctly under spring pressure and thus provides a warning system that the handlebars require maintenance.

A further advantage of the above mechanism is that it allows the rider full time access to controls as the controls mounted on each handlebar portion are never far from each of the rider's hands, and as each handle portion is moved separately, the rider always has one hand on the controls, providing improved safety. Additionally, there is reduced wind resistance and therefore improved efficiency as the rider is able to move between various riding positions without the need for additional bars. Various positions are achieved by one set of bars, so the weight of the bike is kept to a minimum.

In further preferred embodiments the handlebars may include dampers to reduce vibrations caused by irregularities in the surface on which a bicycle may be ridden. Preferably, strategic mounting and locating points incorporate a flexible or compressible material for the purpose of absorbing and reducing road shocks and vibrations.

In some embodiments, the mounting and locating points can include the point of attachement to the bicycle, the pivot points of each handle, or locating stops and their respective contact points.

Examples of the flexible or compressible material may include rubber, nylon or plastic,

or fluid, or other material although these are listed by way of example only and should not be seen to be limiting in any way.

The present invention may have provision for adjustment of the dimensions and/or the position of the handlebars to suit the preference of the rider.

There may be provided an orientation adjustment means facilitating adjustment of the orientation of the handlebars.

There may also be provided a length adjustment means to adjust the length of the handlebars.

In some embodiments the adjustments may be by way of a clamp or adjustable stops, but other adjustment means may be used in accordance with the present invention including those known to someone skilled in the art.

The length of the handlebars may refer to the distance between the handlebar stem and the gripping area on the handlebars.

The orientation of the handlebars may refer to the ability to alter the location of the gripping area of the handlebars in, say, the aero position, according to the preference of the rider.

The orientation adjustment means allows the rider to control the degree to which the movement of the handlebars is through the vertical or horizontal planes.

Thus, the aero position may be higher for some riders, or lower for others.

The change in orientation may be to rotate the handlebar assembly and may be undertaken by the use of adjustable stops, although these are listed by way of example only and should not be seen to be limiting in any way.

The present invention provides an apparatus for use by a rider of a bicycle that allows multiple lockable positions for the handlebars. These lockable positions may correspond to the particular riding position that a rider may take during a ride.

The aero position may be employed whenever possible, due to the streamlined position this provides. For example, on open roads, during headwinds, or anytime once the rider settles into a steady racing rhythm.

The wide position may be taken when mounting the bike, when travelling at slow speeds such as starting off or slowing to stop, or when the rider is off the seat in times of hard acceleration or hill climbing or as an option to riding in the aero position.

The present invention has the following advantages.

Previously, when a rider was in the aero position in conventional aerobars, there was no immediate access to the brake and gear change levers.

These levers were positioned on the conventional handlebar positions, which meant in order to effect a braking motion or a gear change, the rider must change riding or hand positions to the wide, conventional riding position.

Where the levers were placed on the aerobars this only made it easier to change gear in the aero position.

However, in that case the rider would have no quick access to the levers in the wide position.

The present invention provides a system whereby a rider can effect wide and aero riding positions while still having immediate access to gear change and brake levers.

As one handle portion is being moved between positions, the other hand of the rider is always positioned by a brake and gear mechanism.

The present invention may compliment existing brake and gear change lever technologies, by providing access to them when the rider is in the aero position.

Timing a gear change during a ride is of crucial importance. Due to the time taken to change from the aero position to the wide position in previous handlebar technology, the timing of the gear change was more difficult to effect accurately, and hence riding

efficiency suffered as a consequence.

The present invention provides for a rider to time a gear change more efficiently, as the gear change levers are accessible at all times and in all riding positions.

Similarly, when riding close to other riders or in traffic, a cyclist may need to match speed with the vehicle or cycle in front. The levers are readily accessible on the present invention, and therefore reduces the risk of over-running the vehicle in front, by ready access to the brake lever.

Thus, a cause of bunch riding accidents, being a lack of access to the brake levers, is alleviated or minimised.

Furthermore, the present invention provides for a more lightweight apparatus, because extraneous structures are removed from the handlebars.

Previously, the aerobars were combined with conventional bars, adding to the weight of the bike.

In the present invention, the handlebars used in the aero position and the wide position are the same, reducing the weight of the bike, and therefore increasing the efficiency of the ride.

Drag in terms of air resistance is also reduced, as the handlebars used in the aero position and the wide position are the same.

Thus, there is no extraneous handlebar structure causing drag when the rider is in the aero position as would have previously been caused by the conventional handlebars. This improves the mechanical efficiency of the ride, which allows for an increase in speed or a conservation of the riders energy.

In order to effect the changing of the position of the handlebars, the rider need not relinquish full control of the bicycle by removing or releasing their full grip from the handlebars.

The nature of the present invention means that control may be maintained at all times as at least one hand is always on the handlebars.

The gear change/braking action previously took the riders attention away from the path ahead. This potentially resulted in the risk of accident.

The present invention permits instant access to the control levers in all riding positions without the rider having to take their eyes off the path ahead and therefore potentially reduces the risk of accident.

Therefore the safety of the rider is increased, as control of the bicycle is maintained throughout each transition motion.

It is possible that the advantages of the present invention may mean that the aero position may become allowable in bunch riding in the future.

The present invention allows a rider to choose between an aero position and the wide position, or the wide position and the drops position.

The drops position is also adjustable to meet the preferences of the rider.

Method of Attachement to a Bicycle

Conventional aero bars are normally secured to the handle bars which, in turn, are attached to the handlebar stem. The stem clamps to, either the inside, or the outside of the front forks steerer tube where it protrudes from the front of the bicycle frame.

A preferred embodiment of the present invention is that it is secured directly to the front forks thereby replacing three separate items, including the aerobars, the handlebars, and the stem.

A further preferred embodiment is that the present invention is attached to the outside of the steerer tube of the front forks.

When the design of the front forks requires attachement to the inside of the steerer tube there is provided as an option, an adaptor. The bottom end of the adaptor

attaches to the inside of a steerer tube and the top end of the adaptor provides an extension to the steerer tube, to which attachements can be fitted.

It is an object of the present invention that it will be attached to a bicycle at the top of the steerer tube of the front forks, or to the top of an adaptor that is secured to the inside of a steerer tube of the front forks although this should be seen to be limiting in any way as it should be appreciated that other means of attachement could be used, including the handlebar clamp at the forward end of the handlebar stem.

Brief Description of Drawings

Further aspects of the present invention will become apparent from the following description which is given by way of example only and with reference to the accompanying drawings in which:

Figure 1 is a diagrammatical representation of a preferred embodiment of the present invention in the wide position ;

Figure 2 is a diagrammatical representation of a preferred embodiment of the present invention showing the locking device operation ;

Figure 3 is a diagrammatical representation of one preferred embodiment, being the mechanical linkage between armrest and its associated handlebar, and

Figure 4 is a diagrammatical representation a bicycle including one preferred embodiment of the present invention.

Figure 5 is a diagrammatical representation showing the method of attachement to the front forks.

Figure 6 is a diagrammatical representation of an adaptor to facilitate attachement to forks which are designed to be secured on the inside of the steerer tube.

Figure 7 is a diagrammatical representation of a push button assembly that retracts a locking pin when the button is depressed.

Best Modes for Carrying out the Invention

With reference to Figure 1 there is illustrated a portion of one embodiment of the present invention, showing an armrest (1) connected to a bicycle handlebar (2) as described by the present application, in the up position and the handlebar secured (2) in the wide or normal position.

It should be appreciated that the diagonal lines (3 and 4) represent a break in the picture and at break (3) a mirror image of figure 1 would exist, creating a full handlebar and armrest arrangement.

The arm rests (1) are maintained in an upward facing position by a spring (5).

The handle bars are secured in the wide position by a locking device (6).

The locking device (6) fits into a recess (7) when engaged.

When a rider (not shown) wants to move from the wide or normal position to the aero position, the forearm of the appropriate arm is placed onto the armrest (1).

The forearm is then pushed down, to exert a force onto the armrest (1).

The armrest (1) moves in a downward arc as illustrated by arrow (8), stretching the spring (5) and rotating the lock (6), releasing the handlebar (2).

The handle bar (2) rotates into an upward position toward it's aero position, as indicated by arrow (9) and the rider can easily position their hand on the handle, holding the gears and brake (not shown).

With respect to figure 2 there is illustrated another embodiment of the present invention showing a locking device (6) operation.

The armrest (1) is connected to the armrest shaft (10), which in turn is connected to a cam (11) on the armrest shaft (10).

The cam (11) contacts with a pin (12) which is secured to the handlebar (not shown). A rigid support (13) on the main body of the handlebar unit supports the pin on the opposing side to the armrest shaft (10).

When the armrest (1) shaft (10) is moved downward, as indicated by arrow (14), the cam (11) rotates away from the pin (12) as shown by arrow (15) and the pin (15) is released from the rigid support (13) allowing the handlebar (not shown) to rotate upward into the aero position.

With respect to figure 3 there is illustrated one embodiment of the present invention, being the mechanical linkage between the armrest (1) and its associated handlebar (2). The armrest (1) is connected to the armrest arm (14) which is a single piece, but pivots around a point (15) when a downward pressure is applied to the armrest (14) as indicated by arrow (16).

The armrest arm (14) is then connected to a connecting bar (17) which connects to the handlebar (2) which is also a single portion with raised connector (18).

When the armrest (1) is pushed downward in the direction of arrow (16), the armrest arm (14) pivots around the point (15). That pivoting motion pushes the connector bar in the direction indicated by arrow (19). The movement of the connector bar (17) causes the raised connector (18) and handlebar (2) to rotate in the direction of arrow (20), causing the handlebar (2) to rise under the applied pressure of the armrest (1) to place the controls (not shown) into the riders' hand.

It should be appreciated that while the pressure of the downward movement of the armrest can be used to mechanically allow the handle to move upward to position the controls in the hand of the rider, springs can be added to assist the motion. While springs are preferred, they are not essential and other means to assist the motion could also be used, included pneumatic or electronic means.

With respect to figure 4 there is illustrated a bicycle (generally indicated by arrow 21) showing part of the cycle frame (22), front forks (23) and front wheel (24) including the handlebar configuration as described in the present application, showing the point of attachement (25) to the front forks.

Also illustrated is the handlebars (2) in the wide or normal position and the armrests (1) in the upward unused position.

With respect to Figure 5 there is illustrated a typical set of front forks(23) that is separate from a bicycle frame to show the steerer tube(26) and the main body of the present invention(25). This detail is also shown at (25) in Figure 4.

With respect to figure 6 there is illustrated a sectional view of an adaptor (27) with a long bolt(28) that is threaded to fit a special wedge-shaped nut(29) which forces against the inside of the steerer tube when the bolt is tightened and provides a mounting surface(30) for attachements.

With respect to Figure 7 there is illustrated a locking pin (31) with push-button release.A flexible controll cable(32) secured at (34) and outer casing (33) secured at (35) is connected between a push-button (37) which is attached to the outer casing, and a release pin (31) which is attached to the inner cable(32). When the push-button (37) is depressed in the direction of arrow 'A' the locking pin (31) retracts in the direction of arrow 'B' compressing the spring (36). When the push-button (37) is released the spring returns the locking pin to its original position.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof as defined in the appended claims.

SYROTECH LIMITED

Figure 1

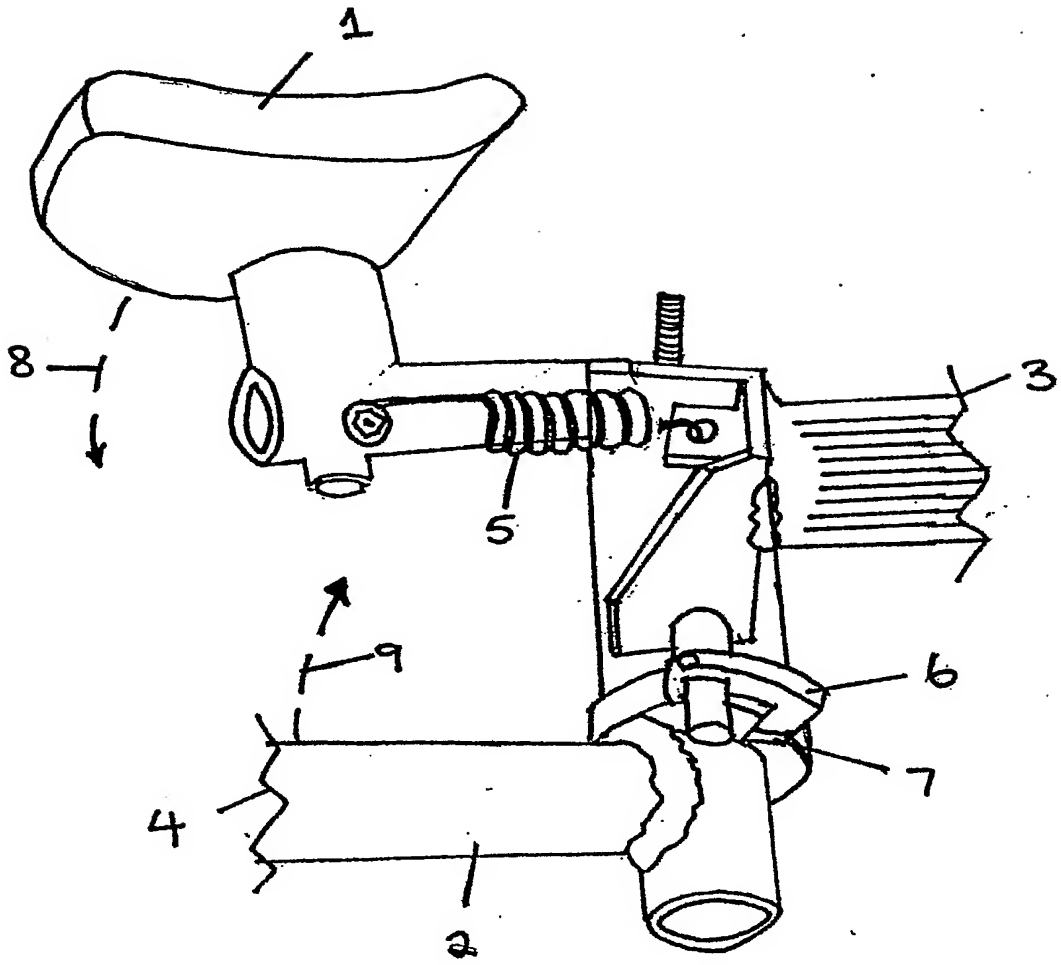

Figure 2

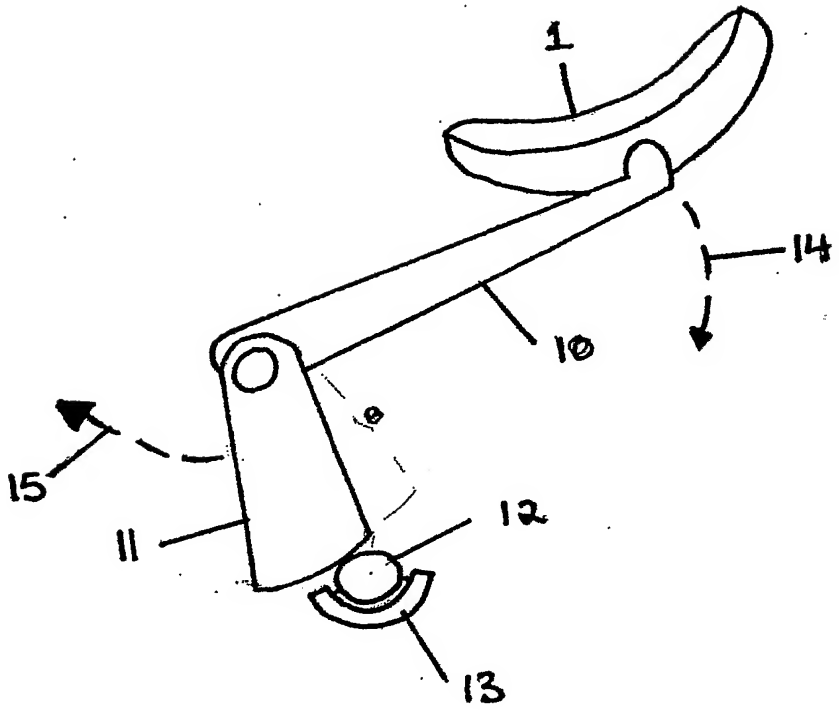

Figure 3

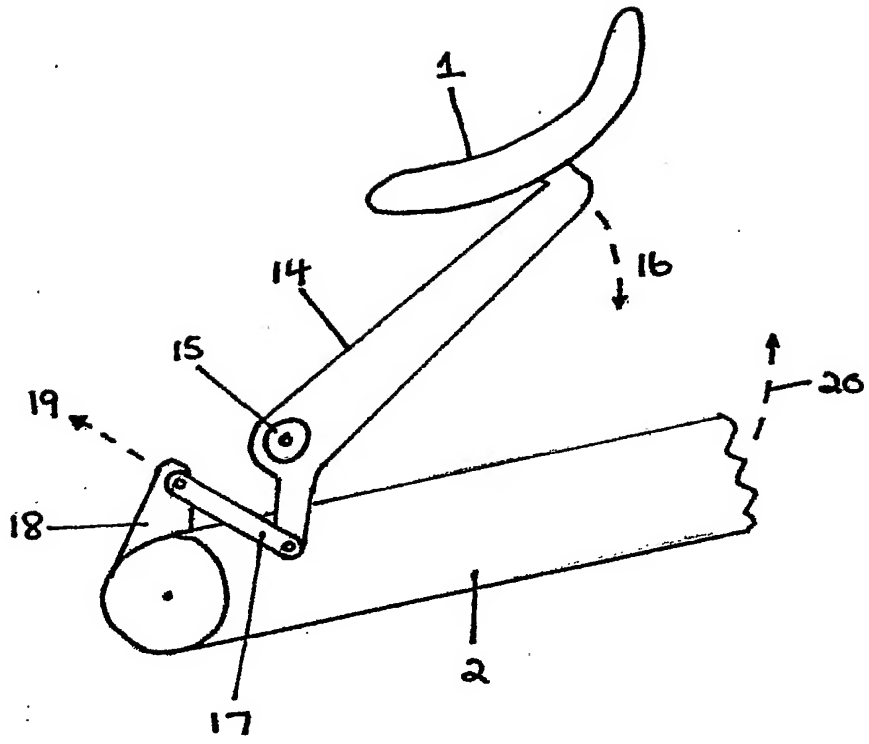

Figure 4

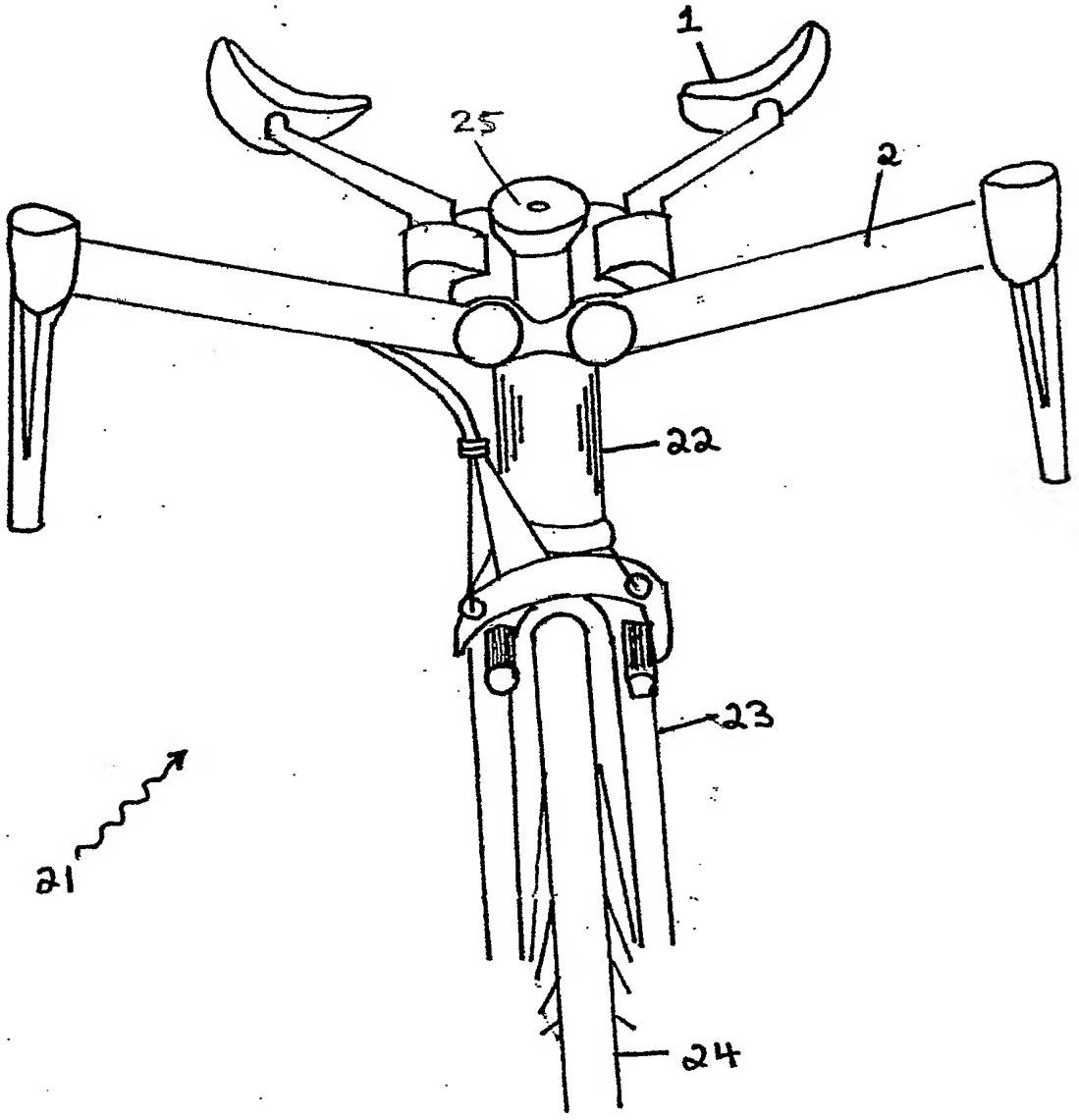

Figure5

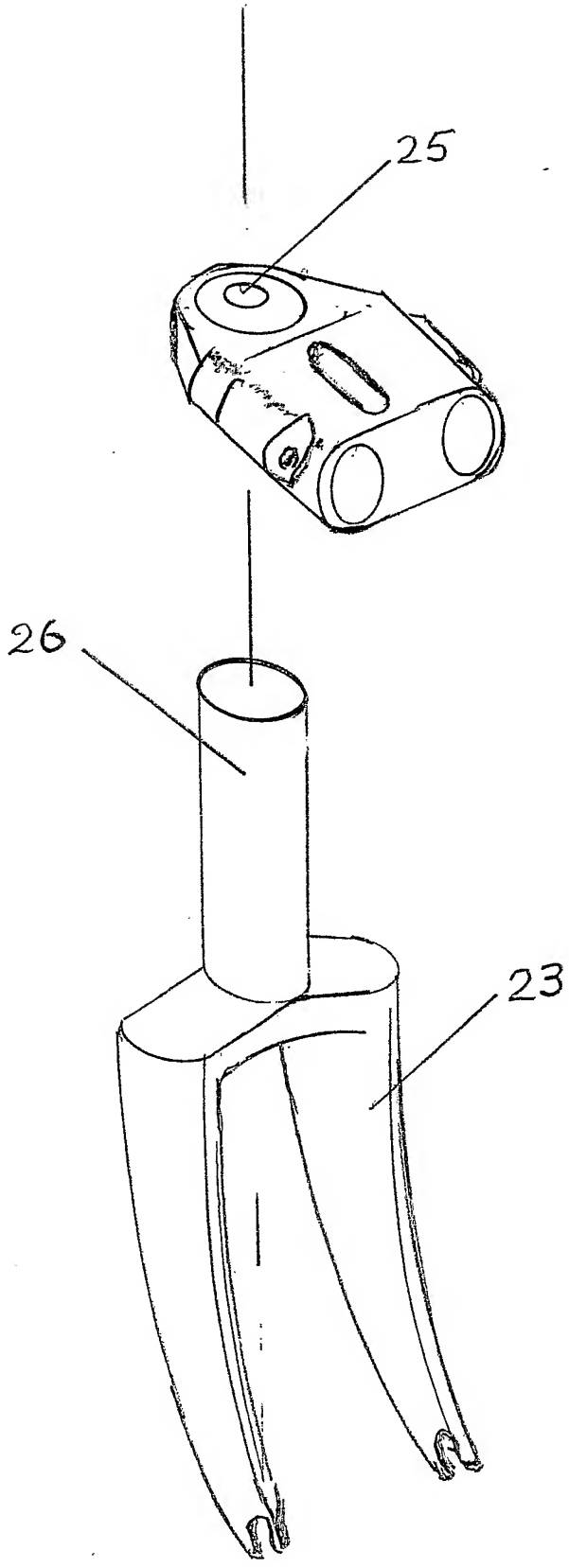

Figure 6

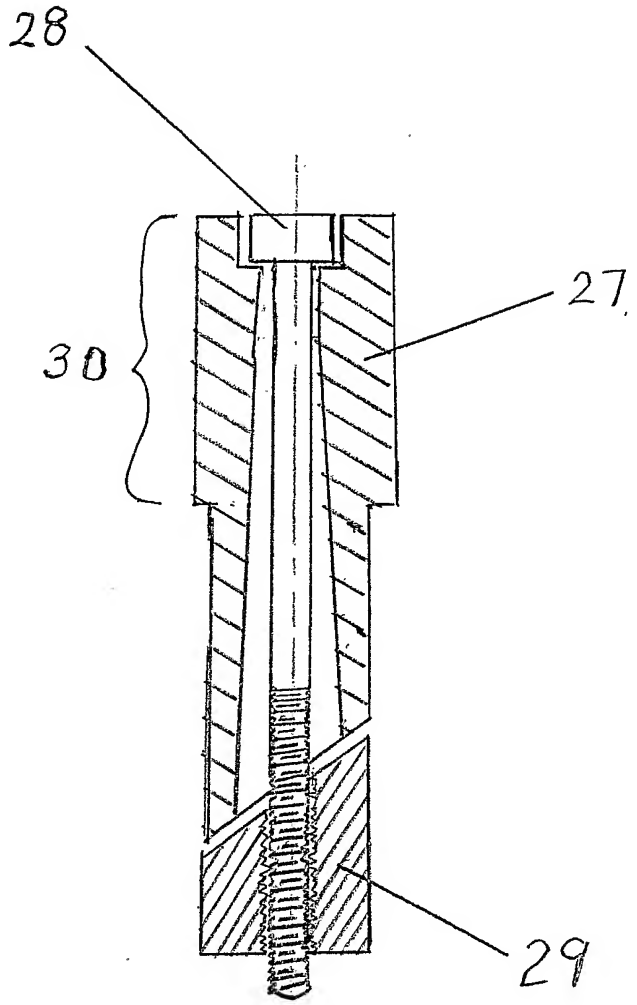

Figure 7